No. 8000141

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Agriculture Service Corporation

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT ...Y THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (... 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

PERENNIAL RYEGRASS

'Pennant'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 28th *day of* November *in the year of our Lord one thousand nine hundred and* eighty-three.

Attest:

Kenneth A. Evans

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R Block

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
UM Composite	Pennant	PV NUMBER 8000141
2. KIND NAME: Perennial ryegrass	3. GENUS AND SPECIES NAME: Lolium perenne L.	FILING DATE 7/8/80 · TIME 11:30 (A.M.) P.M.
4. FAMILY NAME (BOTANICAL): Gramineae	5. DATE OF DETERMINATION: Sept. 1, 1978	FEE RECEIVED $ 500.00 $ 250.00 · DATE 7/8/80 11/4/83
6. NAME OF APPLICANT(S): Agriculture Service Corp.	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*: 5240 Gaffin Rd. SE Salem, OR 97301	8. TELEPHONE AREA CODE AND NUMBER: (503) 581-8899

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Oregon	

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

Mr. John Rutkai Agriculture Service Corp. 5240 Gaffin Rd. SE Salem, OR 97301

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [XX] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [XX] 13B. Exhibit B, Novelty Statement.
- [XX] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [ ] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [ ] YES [XX] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[XX] YES [ ] NO	[XX] FOUNDATION [XX] REGISTERED [XX] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

Exp 7/18/80 as per letter dtd 7/16/80

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [XX] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [XX] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

June 30 1980
(DATE)

(SIGNATURE OF APPLICANT)

1

(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

APR 14 REC'D

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and $500 fee ($250 filing fee and $250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.

14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)

15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

EXHIBIT A

8000141

Origin and Breeding History of Pennant Perennial Ryegrass

1. Pennant perennial ryegrass is an advanced generation synthetic cultivar derived from the progenies of 65 clones. Attractive, disease resistant, early maturing clones were selected from the polycross progeny of a perennial ryegrass plant (experimental designation UM) selected from an old lawn in College Park, Maryland. Clones selected from R-35, L4H, Pennfine and Birdie were included in the polycross block with the UM selection. Progenies of the 65 parental clones of Pennant were evaluated in turf trials maintained at a 2 cm cutting height. These progenies were subsequently established in a spaced-plant isolation nursery where they were rouged for uniformity.

2. Syn II breeder seed of Pennant perennial ryegrass was produced from an isolated, spaced-plant nursery of selected seedlings of the 65 parental clones. Seed propagation of Pennant is limited to three generations of increase from breeder seed, one each of foundation registered and certified.

EWS 1/8/82 3. No ~~objectionable~~ off-type mature plants or variants have been observed in the multiplication of Pennant perennial ryegrass.

4. Syn II breeder seed and Syn III foundation seed have both produced turf of acceptable uniformity.

Table A. Germplasm sources used in the development of Pennant perennial ryegrass

Source of germplasm	Approximate percent contribution
1. UM[1]	50
2. R-35[2]	20
3. L-4H[3]	10
4. Pennfine	10
5. Birdie	10
Total	100

[1]A clone selected from an old lawn in College Park, Maryland

[2]An experimental synthetic developed by the New Jersey Agricultural Experiment Station.

[3]A clone selected from a school playground in Baltimore, Maryland

Exhibit B (Revised Nov. 25, 1981)

Novelty Statement on Pennant Perennial Ryegrass

Pennant is a turf-type cultivar of perennial ryegrass with a rich, moderately dark green color. It tends to be low growing and has a moderately prostrate growth habit. The variety has performed well in turf trials in New Jersey (Tables 1, 2, and 3) and Oregon (Table 14). Pennant is an early maturing cultivar (Table 4) which has a date of anthesis similar to Citation, Pennfine, Derby and Birdie, but preceeds the date of anthesis of Fiesta by 6 days, Dasher by 7 days, Belle and Omega by 8 days, Caravelle by 15 days, Blazer and Yorktown II by 19 days, Manhattan by 24 days, and Loretta by 26 days.

Pennant has the ability to produce an attractive turf of a moderately high density and a medium fine texture. In a turf trial at Adelphia, New Jersey (Table 11), this variety produced a significantly greater number of tillers per unit area than many other varieties. In this trial, Pennant had 109 more tillers per 100 square cm than Caravelle, 113 more than NK-100, 142 more than Ensporta, 151 more than NK-200, 156 more than S-101, 162 more than Sprinter, 185 more than Venlona, 187 more than S-321, and 214 more than Linn. Pennant also produced significantly narrower leaves (Table 11), having a leaf width .22 mm narrower than Caravelle and Ensporta, .11 mm narrower than NK-100, .33 mm narrower than NK-200, .21 mm narrower than S-101, .20 mm narrower than Sprinter, .31 mm narrower than Venlona, .25 mm narrower than S-321, and .45 mm narrower than Linn.

Compared with other varieties in a New Jersey test, Pennant showed significantly less winter injury (Table 13). Pennant exhibited 4 percent winter injury, whereas Pennfine showed 18 percent, Ensporta 24 percent, Venlona 28 percent, NK-100 31 percent, Linn 38 percent, Caravelle 45 percent, S-101 48 percent, and S-321 63 percent.

As shown in Table 16, Pennant has demonstrated good resistance to the Rhizoctonia brown patch disease. In a New Jersey test, seeded August, 1977, at Adelphia, disease on cultivars was rated on a scale of 1 to 9 where 9 represents the least damage. Pennant was rated at 7.5, whereas Manhattan rated 5.0, Loretta 4.9, NK-100 and Score 3.1, Hunter 3.0, Caravelle 2.9, Sprinter 2.5, NK-200 2.1, Linn 2.0, Venlona and S-321 1.9, Ensporta 1.8, and S-101 1.7. Pennant has also shown moderate resistance in Oregon and New Jersey to the winter brown blight incited by Drechslera spp. In Oregon turf trials

4. In respect to crown rust resistance, Pennant was significantly more resistant, showing 4.3 percent crown rust as compared to Citation with 15.9 percent (Table 18).

In comparison to Pennfine, Pennant shows a number of differences including:

1. Pennant scored significantly higher in turf performance in a number of tests in New Jersey and Oregon. Performance was rated on a scale from 1 to 9, where 9 is the best performance. In a test seeded in 1975 at North Brunswick, New Jersey, Pennant had an average score of 6.3 and Pennfine 5.4 (Table 1). In a test seeded in 1977 at Adelphia, New Jersey, Pennant's average score for a two-year period was 6.50 and Pennfine scored 5.20 (Table 2). In another test at Adelphia which was seeded in 1978, Pennant had a score of 6.4 compared to Pennfine's score of 5.7 (Table 3). In a turf trial at Hubbard, Oregon, Pennant's turf performance score was 7.7 and Pennfine had a score of 6.4 (Table 14).

2. Compared to Pennfine, Pennant had significantly higher resistance to winter brown blight disease. In a test at Adelphia, New Jersey (Table 2), Pennant showed 21.3 percent disease and Pennfine 66.5 percent. In Oregon trials (Table 15), Pennant showed 10 percent disease and Pennfine 25.0 percent.

3. The mature plant height of Pennant (81.1 cm) was significantly shorter than Pennfine (85.0 cm) in Oregon trials (Table 5).

4. Pennant has 1.4 fewer florets per spikelet (Table 8).

5. Pennant showed only 4 percent winter injury compared to Pennfine with 18 percent in a trial at Adelphia, New Jersey (Table 13).

6. Pennant exhibited significantly better resistance to crown rust. In an Oregon test, Pennant showed 4.3 percent crown rust compared to Pennfine's 13.0 percent (Table 18).

In comparison with Derby, Pennant shows a number of differences including:

1. Pennant frequently shows better turf performance scores. In the 1975 North Brunswick, New Jersey, test, Pennant's average turf performance score was 6.3 and Derby's was 5.4 (Table 1). In the 1977 Adelphia, New Jersey, test, Pennant's two-year average score was 6.50 and Derby's was 5.55 (Table 2). In turf trials at Hubbard, Oregon, Pennant's average score was 7.7 compared to Derby's score of 6.4 (Table 14).

2. Pennant was 6.6 cm shorter than Derby (Table 5).

3. Pennant had 90 percent white anthers and 10 percent yellow anthers, whereas Derby had 45 percent white anthers and 50 percent yellow anthers (Table 10).

4. Pennant has larger seed. The seed weight per 1,000 seeds was 423 mg greater than Derby and the width of ten seeds was 1.0 mm wider than Derby (Table 12).

5. Pennant showed 4 percent winter injury and Derby showed 14 percent injury in a trial at Adelphia, New Jersey (Table 13).

6. Pennant exhibited significantly better resistance to crown rust in an Oregon test. Pennant showed 4.3 percent crown rust, whereas Derby showed 23.3 percent (Table 18).

In comparison with Regal, Pennant shows a number of differences including:

1. Pennant frequently shows better turf performance scores. In the 1977 Adelphia, New Jersey, test, Pennant's two-year average turf performance score was 6.50 in comparison to Regal's score of 5.80 (Table 2). In the Oregon trial, Pennant's average score was 7.7 and Regal's was 6.6 (Table 4).

2. Pennant was 11.6 cm taller than Regal in Oregon trials (Table 5).

3. Regal had 1.9 more florets per spikelet and 1.0 mm shorter glumes (Table 8).

4. Pennant had 90 percent white anthers and 10 percent yellow anthers, whereas Regal had 45 percent white anthers and 50 percent yellow anthers (Table 10).

5. Pennant showed significantly better crown rust resistance than Regal. In trials near Hubbard, Oregon, Pennant showed 4.3 percent crown rust, whereas Regal showed 28.3 percent (Table 18).

In comparison with Fiesta, Pennant shows a number of differences including:

1. Anthesis of Pennant was 6 days earlier than Fiesta (Table 4).

2. Pennant had 1.4 fewer florets per spikelet (Table 8).

3. Pennant had 90 percent white anthers and 10 percent yellow anthers, whereas Fiesta had 5 percent white anthers and 90 percent yellow anthers (Table 10).

4. Pennant has heavier seed. The seed weight per 1,000 seeds was 619 mg greater than Fiesta (Table 12).

In comparison with Dasher, Pennant shows a number of differences including:

1. Anthesis of Pennant was 7 days earlier than Dasher (Table 4).

2. Pennant has a darker green color.

3. Pennant had 90 percent white anthers and 10 percent yellow anthers, whereas Dasher had 5 percent white anthers and 90 percent yellow anthers (Table 10).

In comparison with Belle, Pennant shows a number of differences including:

1. Anthesis of Pennant was 8 days earlier than Belle (Table 4).

2. Pennant had 1.3 fewer florets per spikelet (Table 8).

3. Pennant had 90 percent white anthers, 10 percent yellow anthers, and no purple anthers, whereas Belle had no white anthers, 90 percent yellow anthers, and 10 percent purple anthers (Table 10).

4. Pennant has heavier seed. The seed weight per 1,000 seeds was 415 mg greater than Belle (Table 12).

In comparison with Omega, Pennant shows a number of differences, including:

1. Anthesis of Pennant was 8 days earlier than Omega (Table 4).

2. Pennant had 90 percent white anthers, 10 percent yellow anthers, and no purple anthers, whereas Omega had no white anthers, 75 percent yellow anthers, and 25 percent purple anthers (Table 10).

Table ___.

Mature plant height measurements of perennial ryegrass varieties grown in replicated seed yield trials near Hubbard, Oregon.

Variety	Mature Plant Height 1978 test cm	SE	1980 test cm	SE	1982 test cm	SE
Pennant	81.1	0.88	104.8	3.2	81.9	0.42
Citation	75.2	0.76	88.7	0.9	70.5	0.49

FORM APPROVED: OMB NO. 40-R3712

FORM GR-470-36
(9-76)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

OBJECTIVE DESCRIPTION OF CULTIVARS
RYEGRASS
(Lolium spp.)

NAME OF APPLICANT(S)

Agricultural Service Corporation

ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code)

5240 Gaffin Road S.E.
Salem, Oregon 97301

VARIETY NAME OR TEMPORARY DESIGNATION

Pennant

FOR OFFICIAL USE ONLY

PVPO NUMBER

8000141

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in first box (e.g. [0][8][9] or [0][9]) when number if either 99 or less or 9 or less. Descriptions of characters should represent those that are typical for the variety. Ranges may be given also. Measure data should be for SPACED PLANTS. Give additional description for all characteristics that cannot be adequately described in the form below. Append all petrinent comparative trial and evaluation data.

1. SPECIES:

[2] 1 = L. MULTIFLORUM (annual or Italian: includes Westerwoldicum) 2 = L. PERENNE (perennial) 3 = L. RIGIDUM (includes Wimmera)
4 = HYBRID (of species) _____ 5 = OTHER (Specify) _____

2. PLOIDY:

[1] 1 = DIPLOID 2 = TETRAPLOID 3 = OTHER (Specify) _____

3. DURATION:

[3] 1 = ANNUAL OR BIENNIAL 2 = SHORT LIVED PERENNIAL (3-4 years) 3 = PERENNIAL (more than 4 years)

STANDARD CULTIVARS

1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO
5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

4. MATURITY (50% HEADED) Use standards from above for comparison:

[3] 1 = VERY EARLY 3 = EARLY 5 = MEDIUM 7 = LATE 9 = VERY LATE

[2][4] DAYS EARLIER THAN . . . . . [7] STANDARD CULTIVAR

[ ][1] DAYS LATER THAN . . . . . [8] STANDARD CULTIVAR

5. MATURE PLANT HEIGHT (Use standard cultivars from above) :

[8][1][1] CM. HIGH

[ ][3][9] CM. SHORTER THAN . . . . . [8] STANDARD CULTIVAR

[ ][2][7] CM. TALLER THAN . . . . . [7] STANDARD CULTIVAR

6. PERCENT WINTER DAMAGE (estimated as percent of the area appearing dead). Use standard cultivars from above for comparison:

[ ][ ][4] PERCENT DAMAGE OF APPLICATION CULTIVAR

[ ][2][2] PERCENT DAMAGE OF . . . . . [8] STANDARD CULTIVAR

7. TURF DENSITY Use standard cultivars from above:

[4][9][3] TILLERS PER 100 SQ. CM.

[ ][ ][ ] LESS TILLERS PER 100 SQ. CM. THAN . . . . [ ] STANDARD CULTIVAR

[ ][4][6] MORE TILLERS PER 100 SQ. CM. THAN . . . [8] STANDARD CULTIVAR

8. FLAG LEAF (at full growth) Use standard cultivars from above:

[1][8][0] CM. LENGTH (from ligule to tip)

[ ][6][1] MM. WIDTH (at widest point)

[ ][0][7] CM. SHORTER THAN . . . . . [8] STANDARD CULTIVAR

[ ][ ][ ] CM. LONGER THAN . . . . . [ ] STANDARD CULTIVAR

[ ][0][6] MM. NARROWER THAN . . . . . [8] STANDARD CULTIVAR

[ ][0][2] MM. WIDER THAN . . . . . [7] STANDARD CULTIVAR

[ ] FLAG LEAF AT BOOT STAGE: 1 = DEFLEXED 3 = RECURVED 5 = HORIZONTAL 7 = SEMI-ERECT 9 = ERECT

8000141

FORM GR-470-36 (2-76) PAGE 2 OF 3

STANDARD CULTIVARS

1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO
5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

9. LEAVES:

[3] VERNATION: 1 = LEAVES ROLLED IN YOUNG SHOOTS
2 = LEAVES SEMI-ROLLED (folded with rolled edges)
3 = LEAVES FOLDED IN YOUNG SHOOTS

[1 0 0] % PLANTS WITH ANTHOCYANIN IN LOWER LEAF SHEATH

[3] FOLIAGE COLOR: 1 = YELLOW GREEN 2 = MEDIUM GREEN 3 = BLUE GREEN

10. SPIKE:

[2 2 7] MM. SPIKE LENGTH (tip to internode below lowest floret)

[8] MM. SHORTER THAN ..... [8]

[ ] MM. LONGER THAN ..... [ ] } USE STANDARD CULTIVARS FROM ABOVE

[3 4 7 0] MG. PER TEN SPIKES (trimmed to internode below lowest floret)

[ ] MG. LIGHTER PER TEN SPIKES THAN ..... [ ]

[8 7 0] MG. HEAVIER PER TEN SPIKES THAN ..... [8] } USE STANDARD CULTIVARS FROM ABOVE

[9] FLORETS PER SPIKELET

PERCENTAGE OF PLANTS WITH:

RACHIS: [ ] % SMOOTH [ ] % ROUGH

SPIKE COLOR: [9 5] % GREEN [5] % PURPLE

LEMMA: [0] % AWNED [ ] MM. AWN LENGTH

[7 6] MM. GLUME LENGTH [ ] 1 = SPIKELET LENGTH NEARLY EQUAL TO OUTER GLUMES
2 = SPIKELET LENGTH MUCH LONGER THAN OUTER GLUMES

11. COLEOPTILE:

[1 0 0] % PLANTS WITH ANTHOCYANIN IN COLEOPTILE

12. ANTHER COLOR:

[9 0] % PLANTS WITH WHITE ANTHERS [1 0] % PLANTS WITH YELLOW ANTHERS

[0] % PLANTS WITH PURPLE ANTHERS

13. ROOT AND PLANT CHARACTERS:

[1 0 0] % PLANTS WITH PROSTRATE GROWTH HABIT [ ] % PLANTS WITH FLUROESCENT ROOTS

0.60%

[ ] % PLANTS WITH UPRIGHT GROWTH HABIT ~~0 to 38~~ EAT 2/8/82

14. SEED:

[1 9 2 5] MG. PER 1,000 SEED [5 2 4] MM. TOTAL LENGTH OF 10 SEEDS [1 2 6] MM. TOTAL WIDTH OF TEN SEEDS

15. DISEASE (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

6	CROWN RUST (Puccinia coronata)	0	DOLLAR SPOT (Sclerotinia)	7	BROWN PATCH (Rhizoctonia)
6	LEAF SPOT (Helminthosporium)	8	MILDEW	3	OTHER *(Specify)* STEM RUST (Puccinia graminis)
0	SNOW MOLD (Typhula)	4	RED THREAD (Corticium)		

16. INSECT (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

0 *(Specify)* _____

17. GIVE RESEMBLANCE VALUE IN LEFT COLUMN AND VARIETY CODE NUMBER IN RIGHT COLUMN FOR VARIETY WITH WHICH COMPARISON IS MADE (1 = LESS THAN, 2 = SAME AS, 3 = MORE ERECT, MORE RESISTANT, DENSER, MORE PERSISTENT, DARKER OR GREATER HEIGHT.):

RESEMBLANCE	CHARACTER	SIMILAR VARIETY	
1	PLANT HABIT (erectness)	8	1 = GULF
2	TILLERING	8	2 = WIMMERA 62
3	WINTER HARDINESS	8	3 = LINN
3	HIGH TEMP. STRESS RESISTANCE	7	4 = PELO
2	TURF PERSISTENCE	8	5 = NORLEA
3	PLANT COLOR	8	6 = ABERYSTWYTH S-23
2	VERTICAL SEEDLING GROWTH RATE	8	7 = MANHATTAN
2	CROWN DENSITY	8	8 = PENNFINE
2	MOWER SHREDDING RESISTANCE	8	

18. GIVE AREA OF ADAPTATION AND INTENDED USE: New Jersey and surrounding areas

19. GIVE AREA TEST RESULTS PRESENTED FROM: New Jersey, Oregon, Arizona, Washington

COMMENTS: California, Texas

Table 4. Maturity ratings of perennial ryegrass cultivars and selections near Hubbard, Oregon during 1978.

Cultivar or selection	Date of initial 10% anthesis
1. Regal	May 25
2. Citation	May 26
3. Pennfine	May 26
4. Derby	May 27
5. Pennant	May 27
6. Birdie	May 28
7. Fiesta	June 2
8. Dasher	June 3
9. Belle	June 4
10. Omega	June 4
11. Caravelle	June 11
12. Blazer	June 15
13. Yorktown II	June 15
14. Manhattan	June 20
15. Loretta	June 22
LSD .05	2.5 days

Table 5. Mature plant height and spike length measurements of perennial ryegrass cultivars and selections grown near Hubbard, Oregon during 1978.

Cultivar or selection	Mature plant height cm	SE	Spike length cm	SE
1. Derby	87.7	0.81	23.3	0.46
2. Birdie	85.5	0.80	25.5	0.46
3. Pennfine	85.0	0.81	23.5	0.44
4. Fiesta	83.2	0.67	22.5	0.50
5. Dasher	81.1	0.56	23.3	0.49
6. Pennant	81.1	0.88	22.7	0.48
7. Omega	80.1	0.52	22.0	0.32
8. Belle	79.2	0.57	22.1	0.40
9. Manhattan	78.4	0.76	24.6	0.34
10. Blazer	76.8	0.63	22.3	0.40
11. Loretta	76.2	0.84	20.7	0.44
12. Citation	75.2	0.76	22.9	0.41
13. Yorktown II	71.4	0.70	21.7	0.38
14. Regal	69.5	0.70	21.2	0.53
15. Caravelle	62.3	0.48	17.6	0.45

Table 11. Tiller densities and leaf width measurements of perennial ryegrass cultivars grown at Adelphia, New Jersey.

Cultivar	Tillers[1/] 100 cm^2 12/78	Leaf[2/] width 12/78
1. Yorktown II	693	1.76
2. Diplomat	583	1.85
3. Fiesta	576	1.92
4. Dasher	559	1.84
5. Blazer	558	1.79
6. Belle	531	1.87
7. Birdie	527	1.97
8. Loretta	526	1.75
9. Omega	517	1.86
10. Citation	517	1.93
11. Pennant	493	1.95
12. Pennfine	447	1.92
13. Derby	446	2.01
14. Manhattan	437	1.95
15. Player	419	2.04
16. Regal	416	1.97
17. Caravelle	384	2.17
18. NK-100	380	2.06
19. Ensporta	351	2.17
20. NK-200	342	2.28
21. S-101	337	2.16
22. Sprinter	331	2.15
23. Venlona	308	2.26
24. S-321	306	2.20
25. Linn	279	2.40
$LSD_{.05}$ =	72	0.11

1/ Tiller counts based on the average of six replications

2/ a. Leaf width data based on the average of ten leaves from each of six replications.

b. Measurements were taken 2mm. from the collar of the second fully expanded leaf counting from the top of the tiller.

3/ Test established August 1977, mowed at 2 cm and maintained at moderately high fertility. Tiller counts and leaf measurements were made during December 1978.

Table 13. Percent winter injury of perennial ryegrass cultivars in test seeded August 30, 1977 at Adelphia, New Jersey.

Cultivar	Percent winter injury March 30, 1978
1. Blazer	0
2. Yorktown II	0
3. Belle	0
4. Fiesta	0
5. Diplomat	0
6. Dasher	0
7. Omega	0
8. Regal	0
9. Manhattan	0
10. Score	4
11. Pennant	4
12. NK200	4
13. Loretta	5
14. Hunter	8
15. Sprinter	8
16. Citation	11
17. Birdie	12
18. Derby	14
19. Pennfine	18
20. Ensporta	24
21. Venlona	28
22. NK100	31
23. Linn	38
24. Caravelle	45
25. S-101	48
26. S-321	63
LSD at 5%	7.3

Table 15. Brown blight ratings of perennial ryegrass cultivars and selections in turf trials at Hubbard, Oregon

Cultivar or selection	Brown blight* percent damage		
	Dec. 16, 1977	Feb. 3, 1978	Average
1. S-101	45.0	45.0	45.0
2. NK-200	40.0	48.3	44.2
3. Citation	36.6	34.2	35.4
4. Linn	25.0	28.3	26.7
5. Pennfine	22.7	29.2	25.0
6. Fiesta	25.0	23.3	24.2
7. Birdie	21.0	23.3	22.2
8. Loretta	17.5	25.0	21.3
9. Derby	19.3	20.0	19.7
10. Dasher	15.7	22.3	19.0
11. Manhattan	18.3	17.8	18.1
12. Regal	18.3	16.0	17.2
13. Belle	16.0	18.3	17.2
14. Pelo	13.0	18.3	15.7
15. Omega	14.5	16.5	15.5
16. Caravelle	13.0	15.7	14.4
17. Yorktown II	11.7	15.7	13.7
18. Blazer	10.0	13.3	11.7
19. Pennant	6.0	14.0	10.0
LSD at 5%	6.4	4.9	5.4

*Brown blight incited by Helminthosporium siccans

Table 16. Reaction of perennial ryegrass cultivars to Rhizoctonia brown patch disease in test planted August 30, 1977 at Adelphia, New Jersey.

Cultivar		Disease rating* 9 = least damage
1.	Pennant	7.5
2.	Blazer	7.4
3.	Yorktown II	7.0
4.	Fiesta	7.0
5.	Citation	7.0
6.	Dasher	6.9
7.	Belle	6.8
8.	Diplomat	6.6
9.	Regal	6.3
10.	Derby	6.2
11.	Omega	6.0
12.	Birdie	5.9
13.	Pennfine	5.8
14.	Manhattan	5.0
15.	Loretta	4.9
16.	Score	3.1
17.	NK100	3.1
18.	Hunter	3.0
19.	Caravelle	2.9
20.	Sprinter	2.5
21.	NK200	2.1
22.	Linn	2.0
23.	Venlona	1.9
24.	S-321	1.9
25.	Ensporta	1.8
26.	S-101	1.7
	LSD at 5%	0.6

*Ratings obtained August 25, 1978.

(Table 15), Pennant exhibited 10 percent damage due to disease, as compared to Belle and Regal with 17.2 percent damage, Manhattan 18.1 percent, Dasher 19.0 percent, Derby 19.7 percent, Loretta 21.3 percent, Birdie 22.2 percent, Fiesta 24.2 percent, Pennfine 25.0 percent, Linn 26.7 percent, Citation 35.4 percent, NK-200 44.2 percent, and S-101 45.0 percent. In a New Jersey turf trial seeded in 1977 (Table 2), Pennant showed 21.3 percent damage from winter brown blight, whereas Acclaim showed 52.3 percent damage, Citation 72.3 percent, Birdie 51.5 percent, Pennfine 66.5 percent, NK-100 49.3 percent, Venlona 45.5 percent, S-101 48.3 percent, and Linn 52.5 percent. In the turf trials seeded in 1978 in New Jersey (Table 3), Pennant exhibited 19.8 percent disease damage, Citation 46.5 percent, Elka 39.0 percent, Idole 59.0 percent, Player 41.0 percent, NK-100 47.0 percent, and Linn 65.5 percent.

Pennant showed moderately good resistance to races of crown rust, incited by Puccinia coronata F. sp. lolii, present near Hubbard, Oregon, during October, 1978 (Table 18). In this trial, Pennant showed a significantly smaller percentage of crown rust than other cultivars. Pennant showed 4.3 percent crown rust, as compared to Caravelle with 10 percent, Pennfine 13.0 percent, Linn 14.0 percent, Citation 15.9 percent, Omega 16.0 percent, Manhattan 16.4 percent, Derby 23.3 percent, Regal 28.3 percent, and NK-200 with 35.0 percent crown rust.

In comparison to other perennial ryegrasses, Pennant most closely resembles Citation. Closer comparisons, however, show that these two cultivars differ in a number of characteristics. These include:

1. Pennant demonstrated significantly better turf performance than Citation and all other perennial ryegrass cultivars evaluated on August 2, 1978, under low fertility and summer stress conditions at North Brunswick, New Jersey (Table 1). On a scale of 1 to 9, where 9 is the best turf performance, Pennant rated 6.5 and Citation rated 4.3.

2. Pennant showed significantly better resistance to the winter brown blight disease in tests conducted at Adelphia, New Jersey (Tables 2 and 3), and near Hubbard, Oregon (Table 15). In the trials that were seeded in 1977 at Adelphia, Pennant showed 21.3 percent damage, whereas Citation showed 72.3 percent. In other trials at Adelphia, seeded in 1978, Pennant exhibited 19.8 percent damage and Citation 46.5 percent. Pennant showed 10 percent damage in the Oregon trials. Citation showed 35.4 percent damage.

3. The mature plant height of Pennant (81.1 cm) was significantly greater than Citation (75.2 cm) in trials grown near Hubbard, Oregon (Table 5).